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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,816	10/25/2000	Sang-hoon Lee	9898-168	3609

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EXAMINER

PALADINI, ALBERT WILLIAM

ART UNIT	PAPER NUMBER
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2125

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DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/696,816

Applicant(s)

LEE, SANG-HOON

Examiner

Albert W Paladini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

Lines 8-9 recite, "extracting a first model parameter set which converges on the I-V characteristic curve within a predetermined error range." In the previous step recited in lines 6-7, an I-V characteristic curve is obtained from measurements on an elementary device. It is not understood from where the first model parameter set is extracted. Also, providing a first set of parameters, which are extracted from anywhere, will not usually result in a convergence. A convergence process generally consists of an iterative procedure.

Claim 7

Lines 7-8 recite, "extracting a first model parameter set which converges on the I-V characteristic curve within a predetermined error range." In the previous step recited in lines 5-6, an I-V characteristic curve is obtained from measurements on an elementary device. It is not understood from where the first model parameter set is

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extracted. Also, providing a first set of parameters, which are extracted from anywhere, will not usually result in a convergence. A convergence process generally consists of an iterative procedure.

Claim 10

Lines 5-7 recite, "measuring a main characteristic data value of the elementary device; extracting a first model parameter set which converges on the main characteristic data within a predetermined error range." If for example, the main characteristic data value is gate voltage, what does it mean to extract a model parameter set, which converges on the gate voltage? It is not understood from where the first model parameter set is extracted. Also, providing a first set of parameters, which are extracted from anywhere, will not usually result in a convergence. A convergence process generally consists of an iterative procedure.

Appropriate correction and clarification are required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singhal (6560568).

Addressing what appears to be the general objective of the invention the recited elements of the claims that are understood form the basis for this rejection.

Singhal discloses a method of simulating the performance of an integrated circuit design and using statistical techniques to minimize the predetermined error range. He states on lines 42-67 in column 3, "Such techniques entail making a new, complete set of I-V measurements on a large number of devices. In this application, the term "I-V measurements" is used to refer to this type of measurement of complete sets of I-V measurements made on a large number of test devices. These I-V measurements are typically made on devices of varying sizes and temperatures on a number of sample wafers, for example. Making I-V measurements entails making a very large number of I-V measurements for each device to be measured. This can, therefore, be a costly, expensive, time-consuming, and often impracticable activity. From the I-V measurements, device model parameters could be extracted for each test device. Regression analysis is then used to develop equations relating device model parameters to other available data such as electrical test (e-test) data. This allows a statistical device model to be developed that will be able to accurately predict ("play back") the actual e-test data. The use of such tools to develop a statistical model is very complicated and resource- and time-intensive. It requires either foregoing refinements of the statistical model, using cruder models than is otherwise possible to achieve, or making special I-V measurements every time the statistical device model is to be updated. There is, accordingly, a need for improved techniques for deriving or updating statistical device models for mature processes."

Singhal does not disclose the "extracting" step, but as shown in paragraphs 1 and 2, it is not understood and would not be obvious to one of normal skill in the art.

Relevant Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stengel (6106563) discloses a method and apparatus for extracting parameters for an electrical structure where model parameters refer to electrical design parameters, distributed parameters, and circuit specific parameters which is especially useful in modeling linear networks.

Yasuda (6330526) discloses a characteristic evaluation method for semiconductor devices, which includes extracting, predetermined parameters, eliminating outliers, selecting devices typical within the eliminated outlier set, extracting typical parameters from the selected devices, and generating a worst case parameter on the basis of the data.

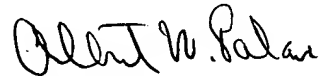
Davis (6381564) discloses a method for providing optimal tuning for complex simulators where a set of values is obtained from the simulator at each location in the design space (this set can be one or plural points). Thus, there is obtained a set of models over the design space-on a for each output. Additionally, there is a different set of models for each value of the range variable (e.g. 0.16, 0.18, 0.25) and four response variables (e.g. V_{tsat} , $v_{t\sin}$ I_{dsat} , I_{off}) in the example provided, this providing a total of 12 models. This is one of the advantages of the method, namely that the responses are modeled directly. Also important is the fact that the models are functions of the tuning parameters.

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7. Any inquiry concerning this communication or earlier communication from the examiner should be direct to Albert W. Paladini whose telephone number is (703) 308-2005. The examiner can normally be reached from 7:30 to 3:30 PM on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Leo P. Picard, can be reached on (703) 308-0538. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Albert W. Paladini
Primary Examiner
Art Unit 2125

January 16, 2004